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(54) **BACKLIGHT MODULE AND LIQUID DISPLAY DEVICES WITH THE SAME**

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F21V 5/00	(2006.01)

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(58) **Field of Classification Search**

CPC .. G02B 6/0086; G02B 6/0088; G02B 6/0085; G02B 6/0028; G02B 6/002; G06F 13/18; G06F 1/133615

USPC 362/97.1, 97.3, 311.01, 311.02, 311.06, 362/615, 628, 632, 633, 634, 812; 349/58, 349/61, 62, 65, 67

See application file for complete search history.

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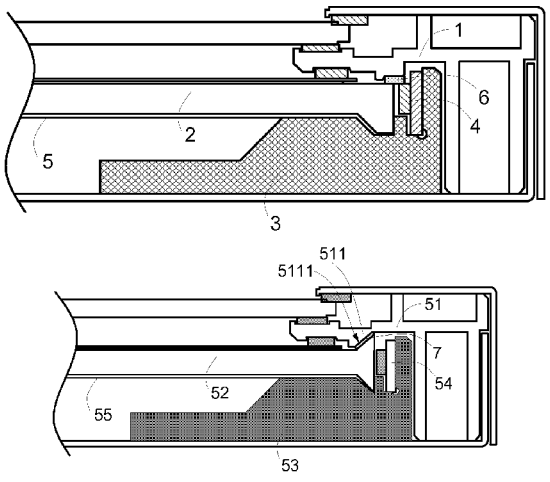
(57) **ABSTRACT**

A backlight module and a liquid crystal device are disclosed. The backlight module includes a plastic frame, an aluminum extrusion, and a light guiding plate. The plastic frame and the aluminum extrusion prohibit the light guiding plate from moving in an up and down direction. Wherein the light guiding plate is disposed on the aluminum extrusion. The light guiding plate includes a body, and a first position portion extends along the body towards the aluminum extrusion. The aluminum extrusion includes a position slot corresponding to the first position portion, and the first position portion closely engages with the first position slot. The backlight module and the liquid crystal device fix the light guiding plate by engaging the light guiding plate, the aluminum extrusion, and the plastic frame so that the light guiding plate is stably fixed and the light coupling is stable.

14 Claims, 3 Drawing Sheets



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F21V 8/00	(2006.01)
G02F 1/1335	(2006.01)
G02F 1/1333	(2006.01)

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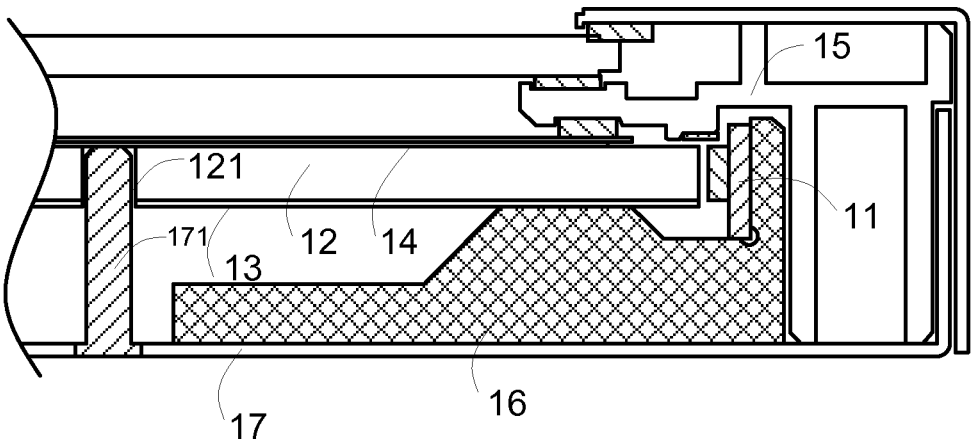


Fig. 1 (Prior Art)

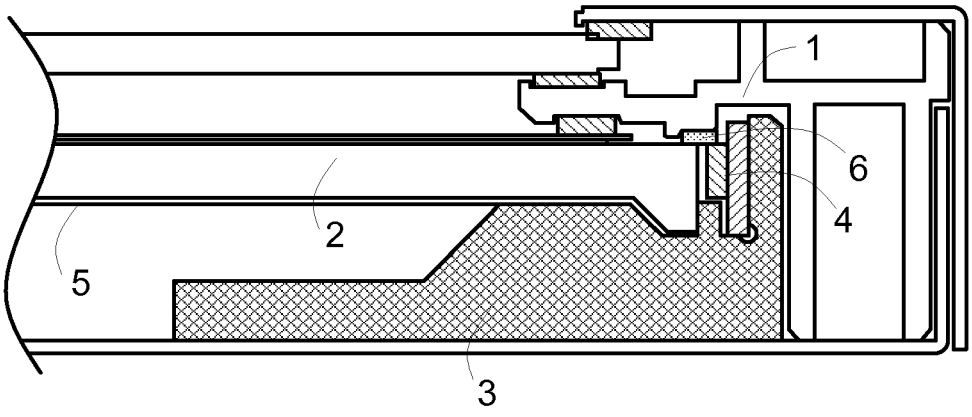
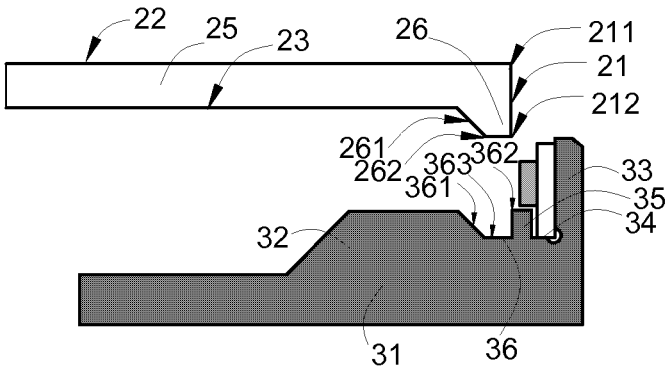


Fig. 2


22
25
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211
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261
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Fig 3

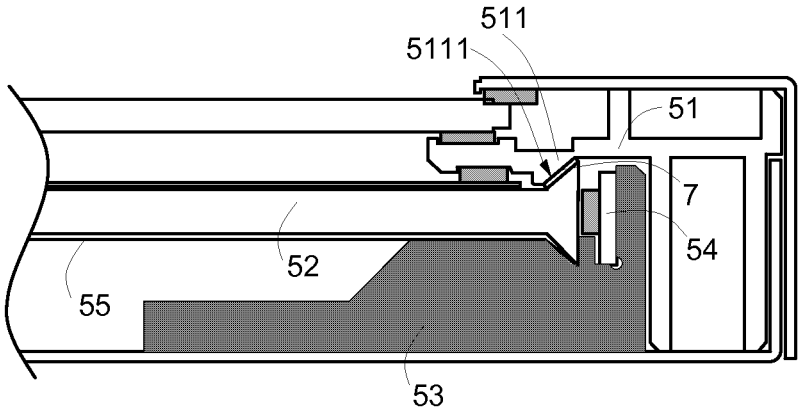
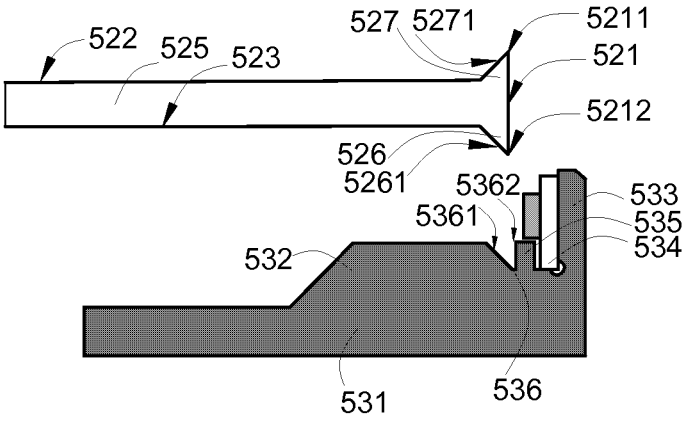

511
5111
51
7
54
52
55
53

Fig 4


522
525
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527
5271
5211
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5212
526
5261
5362
5361
533
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531
536

Fig 5

BACKLIGHT MODULE AND LIQUID DISPLAY DEVICES WITH THE SAME

BACKGROUND OF THE INVENTION

1. Field of the Invention

Embodiments of the present disclosure relate to display technology, and more particularly to a backlight module and a liquid display device with the same.

2. Discussion of the Related Art

Backlight module is a key component of liquid crystal devices. The backlight module is for providing lights with sufficient brightness and uniform distribution so that the liquid crystal device may display images. Referring to FIG. **1**, the conventional backlight module includes a light source **11**, a light guiding plate **12**, a reflective sheet **13**, an optical film **14**, a plastic frame **15**, an aluminum extrusion **16**, and a backplane **17**. The light guiding plate **12** is arranged above the aluminum extrusion **16**. The light source **11** is arranged above the aluminum extrusion **16** and is on a first side of the light guiding plate **12**. A groove **121** is arranged in a second side of the light guiding plate **12**. The second side of the light guiding plate **12** is farther from the light source **11** than the first side. The groove **121** engages with a position pillar **171** arranged on the backplane **17** so as to locate the light guiding plate **12**. However, the gap between the position pillar **171** and the groove **121** and the location deviation on the backplane **17** of the position pillar **171** may result in instability of light coupling. As such, the light utilization of the backlight module is not stable and the brightness of the liquid crystal panel is also not stable.

SUMMARY

The object of the claimed invention is to provide a backlight module and a liquid crystal device with stable light coupling.

A backlight module includes a plastic frame, an aluminum extrusion, and a light guiding plate. The plastic frame and the aluminum extrusion prohibit the light guiding plate from moving in an up and down direction. wherein the light guiding plate is disposed on the aluminum extrusion, the light guiding plate includes a body. A first position portion extends along the body towards the aluminum extrusion, and a second position portion extends from the body towards the plastic frame. The aluminum extrusion includes a position slot corresponding to the first position portion, and the first position portion closely engages with the first position slot, the plastic frame includes a contact portion corresponding to the second position portion. The second position portion closely abuts against the contact portion.

The first position portion includes a first tilt surface extending from a bottom of the body toward a bottom edge of the light incident surface. The first tilt surface includes a first edge and a second edge. The first edge is farther from the light source than the second edge, and the first edge of the first tilt surface connects with the bottom edge of the light incident surface via the bottom surface of the first position portion.

The position slot includes a bottom wall, and a first sidewall and a second sidewall arranged in two sides of the bottom wall. Wherein the first sidewall is parallel to the first tilt surface, the second sidewall is parallel to the light incident surface, and the bottom wall is parallel to the bottom surface of the first position portion.

Wherein the first sidewall closely abuts against the first tilt surface, the second sidewall closely abuts against the light incident surface, and the bottom wall closely abuts against the bottom surface.

Wherein the backlight module further includes a reflective sheet arranged between the bottom of the body and the aluminum extrusion, and the reflective sheet also spans the first sidewall of the aluminum extrusion.

In another aspect, a backlight module includes a plastic frame, an aluminum extrusion, and a light guiding plate.

The plastic frame and the aluminum extrusion prohibit the light guiding plate from moving in an up and down direction. Wherein the light guiding plate is disposed on the aluminum extrusion. The light guiding plate includes a body, and a first position portion extends along the body towards the aluminum extrusion.

The aluminum extrusion includes a position slot corresponding to the first position portion, and the first position portion closely engages with the first position slot.

Wherein the first position portion includes a first tilt surface extending from a bottom of the body towards a bottom edge of the light incident surface. The first tilt surface includes a first edge and a second edge. The first edge is farther from the light source than the second edge. The first edge of the first tilt surface connects with the bottom edge of the light incident surface via the bottom surface of the first position portion. The position slot includes a bottom wall, and a first sidewall and a second sidewall arranged in two sides of the bottom wall, wherein the first sidewall is parallel to the first tilt surface, the second sidewall is parallel to the light incident surface, and the bottom wall is parallel to the bottom surface of the first position portion. Wherein the first sidewall closely abuts against the first tilt surface, the second sidewall closely abuts against the light incident surface, and the bottom wall closely abuts against the bottom surface.

Wherein the backlight module further includes a reflective sheet arranged between the bottom of the body and the aluminum extrusion, and the reflective sheet also spans the first sidewall of the aluminum extrusion.

Wherein the first position portion includes a first tilt surface extending from a bottom of the body towards a bottom edge of the light incident surface, the first tilt surface includes a first edge and a second edge, the first edge is farther from the light source than the second edge, the first edge of the first tilt surface connects with the bottom edge of the light incident surface via the bottom surface of the first position portion. The position slot includes a first sidewall and a second sidewall, the first sidewall is parallel to the first tilt surface, the second sidewall is parallel to the light incident surface, and the first sidewall and the second sidewall intersects with each other in the bottom of the first position slot; and wherein the first sidewall closely abuts against the first tilt surface, and the second sidewall closely abuts against the light incident surface.

Wherein the light guiding plate further includes a second position portion extending from the body towards the plastic frame, the plastic frame has a contact portion corresponding to the second position portion, and the second position portion closely abuts against the contact portion.

Wherein the second position portion includes a second tilt surface extending from a top of the body towards the top edge of the light incident surface, the contact portion includes a contact surface parallel to the second tilt surface, and the contact surface closely abuts against the second tilt surface.

Wherein the backlight module further includes a buffer material with reflective attribute, the buffer material is

arranged between the contact surface of the plastic frame and the second tilt surface of the light guiding plate.

Wherein the first position portion and the second position portion are formed by injection molding, and are symmetrically arranged along a length of light guiding plate.

Wherein the backlight module includes a light source arranged on the sidewall above the aluminum extrusion, and the sidewall faces toward the light incident surface of the light guiding plate.

In another aspect, a liquid crystal device, includes a backlight module includes a plastic frame, an aluminum extrusion, and a light guiding plate. The plastic frame and the aluminum extrusion prohibit the light guiding plate from moving in an up and down direction, wherein the light guiding plate is disposed on the aluminum extrusion, the light guiding plate includes a body, and a first position portion extends along the body towards the aluminum extrusion.

The aluminum extrusion includes a position slot corresponding to the first position portion, and the first position portion closely engages with the first position slot.

Wherein the first position portion includes a first tilt surface extending from a bottom of the body towards a bottom edge of the light incident surface, the first tilt surface includes a first edge and a second edge, the first edge is farther from the light source than the second edge, the first edge of the first tilt surface connects with the bottom edge of the light incident surface via the bottom surface of the first position portion; the position slot includes a bottom wall, and a first sidewall and a second sidewall arranged in two sides of the bottom wall, wherein the first sidewall is parallel to the first tilt surface, the second sidewall is parallel to the light incident surface, the bottom wall is parallel to the bottom surface of the first position portion; wherein the first sidewall closely abuts against the first tilt surface, the second sidewall closely abuts against the light incident surface, and the bottom wall closely abuts against the bottom surface.

Wherein the backlight module further includes a reflective sheet arranged between the bottom of the body and the aluminum extrusion, and the reflective sheet also spans the first sidewall of the aluminum extrusion.

Wherein the first position portion includes a first tilt surface extending from a bottom of the body towards a bottom edge of the light incident surface, the first tilt surface includes a first edge and a second edge, the first edge is farther from the light source than the second edge, the first edge of the first tilt surface connects with the bottom edge of the light incident surface via the bottom surface of the first position portion; the position slot includes a first sidewall and a second sidewall, the first sidewall is parallel to the first tilt surface, the second sidewall is parallel to the light incident surface, and the first sidewall and the second sidewall intersects with each other in the bottom of the first position slot; and wherein the first sidewall closely abuts against the first tilt surface, and the second sidewall closely abuts against the light incident surface.

Wherein the light guiding plate further includes a second position portion extending from the body towards the plastic frame, the plastic frame has a contact portion corresponding to the second position portion, and the second position portion closely abuts against the contact portion.

Wherein the second position portion includes a second tilt surface extending from a top of the body towards the top edge of the light incident surface, the contact portion includes a contact surface parallel to the second tilt surface, and the contact surface closely abuts against the second tilt surface.

Wherein the backlight module further includes a buffer material with reflective attribute, the buffer material is arranged between the contact surface of the plastic frame and the second tilt surface of the light guiding plate.

Wherein the first position portion and the second position portion are formed by injection molding, and are symmetrically arranged along a length of light guiding plate.

Wherein the backlight module includes a light source arranged on the sidewall above the aluminum extrusion, and the sidewall faces toward the light incident surface of the light guiding plate.

The backlight module and the liquid crystal device fix the light guiding plate by engaging the light guiding plate, the aluminum extrusion, and the plastic frame so that the light guiding plate is stably fixed and the light coupling is stable. The structure of the backlight module is simple, and the manufacturing cost is reduced by omitting the position assembly for the light guiding plate.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a cross-sectional view of a conventional backlight module.

FIG. **2** is a cross-sectional view of the backlight module in accordance with a first embodiment of the claimed invention.

FIG. **3** is a cross-sectional view of the light guiding plate and the aluminum extrusion of FIG. **2** before assembled.

FIG. **4** is a cross-sectional view of the backlight module in accordance with a second embodiment of the claimed invention.

FIG. **5** a cross-sectional view of the light guiding plate and the aluminum extrusion of FIG. **4** before assembled.

DETAILED DESCRIPTION OF THE EMBODIMENTS

Embodiments of the invention will now be described more fully hereinafter with reference to the accompanying drawings, in which embodiments of the invention are shown.

Referring to FIG. **2**, in one embodiment, the backlight module includes a plastic frame **1**, a light guiding plate **2**, an aluminum extrusion **3**, a light source **4**, and a reflective sheet **5**.

The plastic frame **1** and the aluminum extrusion **3** prohibit the light guiding plate **2** from moving in an up and down direction. The light guiding plate **2** is disposed on the aluminum extrusion **3**. The light source **4** is arranged above the aluminum extrusion **3**, and is arranged in the right side of the light guiding plate **2**. The reflective sheet **5** is arranged between the light guiding plate **2** and the aluminum extrusion **3**.

Also referring to FIG. **3**, the light guiding plate **2** includes a light incident surface **21**, a light emitting surface **22**, a bottom surface **23**, a body **25**, and a first position portion **26** extends along the body **25** towards the aluminum extrusion **3**. The light incident surface **21** includes a top edge **211** and a bottom edge **212**. The light emitting surface **22** connects with the top edge **211** of the light incident surface **21**. The bottom surface **23** connects with the bottom edge **212** of the light incident surface **21**. The light emitting surface **22** is opposite to the bottom surface **23**. The light incident surface **21** receives the lights from the light source **4**, and guides the lights to the light guiding plate **2**. The light emitting surface **22** then guides the lights towards the light guiding plate **2**.

The aluminum extrusion **3** has a first position slot **36** corresponding to the first position portion **26**. The first position portion **26** closely engages with the first position slot **36** so as to fasten the light guiding plate **2**.

Specifically, the first position portion **26** includes a first tilt surface **261** and a bottom surface **262**. The first tilt surface **261** extends from a bottom of the body **25** towards the bottom edge **212** of the light incident surface **21**. The first tilt surface **261** includes a first edge and a second edge, and the first edge is farther than the second edge with respect to the light source **4**. The first edge of the first tilt surface **261** connects with the bottom edge **212** of the light incident surface **21** via the bottom surface **262** of the first position portion **26**.

The first position slot **36** includes a bottom wall **363**, and a first sidewall **361** and a second sidewall **362** respectively arranged on two sides of the bottom wall **363**. The bottom wall **363** connects with the first sidewall **361** and the second sidewall **362**. The first sidewall **361** is parallel to the first tilt surface **261**. The second sidewall **362** is parallel to the light incident surface **21**. The bottom wall **363** is parallel to the bottom surface **262**. The first sidewall **361** closely abuts against the first tilt surface **261**, the second sidewall **362** closely abuts against the light incident surface **21**, and the bottom wall **363** closely abuts against the bottom surface **262**.

In the embodiment, the first position portion **26** has a substantially trapezoid-shaped cross section.

In the embodiment, the reflective sheet **5** is arranged between the bottom of the body **25** and the aluminum extrusion, and the reflective sheet **5** also spans the first sidewall **361** of the aluminum extrusion **3**. In real scenarios, the reflective sheet **5** may span the first tilt surface **261** of the first position portion **26** to guide leaked lights towards the light guiding plate **2**. In this way, the light utilization is enhanced and such arrangement provides a buffer effect for the light guiding plate **2**.

Preferably, in the embodiment, the backlight module includes a buffer material **6**. The buffer material **6** is arranged between the plastic frame **1** and the light guiding plate **2**. The buffer material **6** presses the light emitting surface **22** of the light guiding plate **2** together with the plastic frame **1** so that the first position portion **26** may closely abut against the first position slot **36**. As such, the stability of the light guiding plate is enhanced, and the buffer material **6** provides the buffer effect for the light guiding plate **2** at the same time.

In the embodiment, the aluminum extrusion **3** includes a bottom portion **31**, a top portion **32**, a side potion **33**, an installation slot **34**, and a protrusion **35**. The raised top portion **32** is arranged above the bottom portion **31** to support the body **25**. The side potion **33** is vertical to the bottom portion **31** and is arranged on one side of the bottom portion **31**. The light source **4** is arranged on the side potion **33**. The first position slot **36** and the installation slot **34** are spaced by a distance and are arranged on the top portion **32**. The protrusion **35** is arranged between the first position slot **36** and the installation slot **34**. Furthermore, the protrusion **35** is arranged between the light source **4** and the light guiding plate **2**. The protrusion **35** also abuts against the light incident surface **21** to prevent the light guiding plate **2** from being damaged due to being too close to the light source **4**. In the embodiment, the protrusion **35** contacts with the area of the light guiding plate **2** that are not exposed to the light. Thus, the protrusion **35** has not contacted an active area of the light incident surface **21** of the light guiding plate so that emitting effect of the backlight module is not affected.

Referring to FIG. **4**, in a second embodiment, the backlight module includes a plastic frame **51**, a light guiding plate **52**, a light source **54**, and a reflective sheet **55**. The light source **54**, the reflective sheet **55** is substantially similar to the light source **4** and the reflective sheet **5** in the first embodiment.

Referring to FIG. **5**, the light guiding plate **52** includes a light incident surface **521**, a light emitting surface **522**, a bottom surface **523**, a body **525**, and a first position portion **526** extends along the body **525** towards an aluminum extrusion **53**.

The aluminum extrusion **53** has a first position slot **536** corresponding to the first position portion **526**. The first position portion **526** closely engages with the first position slot **536** so as to fasten the light guiding plate **52**.

Specifically, the first position portion **526** includes a first tilt surface **5261** extending from a bottom of the body **525** towards the bottom edge **5212** of the light incident surface **521**. A first edge of the first tilt surface **5261** connects with the bottom edge **5212** of the light incident surface **521**. The first position slot **536** includes a first sidewall **5361** and a second sidewall **5362**. The first sidewall **5361** is parallel to the first tilt surface **5261**, and the second sidewall **5362** is parallel to the light incident surface **521**. The first sidewall **5361** and the second sidewall **5362** intersect with each other in the bottom of the first position slot **536**. The first sidewall **5361** closely abuts against the first tilt surface **5261**, and the second sidewall **5362** closely abuts against the light incident surface **521**.

In the embodiment, the first position portion **526** has a substantially triangle-shaped cross section. In other embodiments, the first position portion **526** may have, but not limited to, a substantially rectangular-shaped cross section.

In the embodiment, the light guiding plate **52** includes a second position portion **527** extends from the body **525** towards the plastic frame **51**. The first position portion **526** and the second position portion **527** are formed by injection molding. The plastic frame **51** has a contact portion **511** corresponding to the second position portion **527**. The second position portion **527** closely abuts against the contact portion **511** to enhance the stability of the light guiding plate.

Specifically, the second position portion **527** includes a second tilt surface **5271** extending from a top of the body **525** towards the top edge **5211** of the light incident surface **521**. The contact portion **511** includes a contact surface **5111**. The contact surface **5111** is parallel to the second tilt surface **5271**, and the contact surface **5111** closely abuts against the second tilt surface **5271**.

Preferably, the second position portion **527** and the first position portion **526** are symmetrically arranged along a length of light guiding plate **52** to enhance the stability of the light guiding plate **52**.

Furthermore, the backlight module includes a buffer material **7** arranged between the contact surface **5111** of the plastic frame **51** and the second tilt surface **5271** of the light guiding plate **52** for providing the buffer effect. In real applications, the buffer material **7** may be arranged on the plastic frame **51**, or on the light guiding plate **52**. The buffer material **7** may be made by different materials, such as silica gel, rubbers, and so on. The buffer material **7** may be arranged on the plastic frame **51** or the light guiding plate **52** by different methods. For example, the buffer material **7** may be arranged on the plastic frame **51** or the light guiding plate **52** by a twin adhesive. Alternatively, slots may be formed on the plastic frame **51** or the light guiding plate **52** so that the buffer material **7** may be engaged with the slots.

In the embodiments, preferably, the buffer material **7** may be buffer materials with reflective attribute so that the buffer material **7** may guide the leaked lights from the second tilt surface **5271** towards the light guiding plate **52**. Thus, the light utilization is enhanced.

Referring to FIG. **5**, in the embodiment, the aluminum extrusion **53** includes a bottom portion **531**, a top portion **532**, a side portion **533**, an installation slot **534**, and a protrusion **535**.

In the embodiment, the bottom portion **531**, the top portion **532**, the side portion **533**, the installation slot **534**, and the protrusion **535** are substantially the same with those disclosed in the first embodiment.

In one embodiment, a liquid crystal device includes the backlight module disclosed in the above embodiments.

The backlight module and the liquid crystal device fix the light guiding plate by engaging the light guiding plate, the aluminum extrusion, and the plastic frame so that the light guiding plate is stably fixed and the light coupling is stable. The structure of the backlight module is simple, and the manufacturing cost is reduced by omitting the position assembly for the light guiding plate.

It is believed that the present embodiments and their advantages will be understood from the foregoing description, and it will be apparent that various changes may be made thereto without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the examples hereinbefore described merely being preferred or exemplary embodiments of the invention.

What is claimed is:

1. A backlight module, comprising:

a plastic frame;

an aluminum extrusion comprising a protrusion being arranged between a first position slot and an installation slot of the aluminum extrusion;

a light guiding plate;

the plastic frame and the aluminum extrusion prohibit the light guiding plate from moving in an up and down direction, wherein the light guiding plate is disposed on the aluminum extrusion, the light guiding plate comprises a body, and a first position portion extends along the body towards the aluminum extrusion; and

the first position slot of the aluminum extrusion corresponding to the first position portion of the light guiding plate, and the first position portion of the light guiding plate closely engages with the first position slot of the aluminum extrusion, and the protrusion of the aluminum extrusion is arranged between a light source and the light guiding plate;

the first position portion comprises a first tilt surface extending from a bottom of the body towards a bottom edge of a light incident surface, the first tilt surface comprises a first edge and a second edge, the first edge is farther from the light source than the second edge, the first edge of the first tilt surface connects with the bottom edge of the light incident surface via a bottom surface of the first position portion;

the first position slot comprises a bottom wall, and a first sidewall and a second sidewall arranged in two sides of the bottom wall, wherein the first sidewall is parallel to the first tilt surface, the second sidewall is parallel to the light incident surface, the bottom wall is parallel to the bottom surface of the first position portion; and

wherein the first sidewall closely abuts against the first tilt surface, the second sidewall closely abuts against the light incident surface, and the bottom wall closely abuts against the bottom surface of the first position portion.

2. The backlight module as claimed in claim **1**, wherein the backlight module further comprises a reflective sheet arranged between the bottom of the body and the aluminum extrusion, and the reflective sheet also spans the first sidewall of the aluminum extrusion.

3. The backlight module as claimed in claim **1**, wherein the backlight module comprises a light source arranged on a sidewall above the aluminum extrusion, and the sidewall faces toward a light incident surface of the light guiding plate.

4. A liquid crystal device, comprising:

a backlight module comprising a plastic frame, an aluminum extrusion, and a light guiding plate, the plastic frame and the aluminum extrusion prohibit the light guiding plate from moving in an up and down direction, wherein the light guiding plate is disposed on the aluminum extrusion, the light guiding plate comprises a body, and a first position portion extends along the body towards the aluminum extrusion; and

the first position slot of the aluminum extrusion corresponding to the first position portion, and the first position portion of the light guiding plate closely engages with the first position slot of the aluminum extrusion, and a protrusion of the aluminum extrusion is arranged between a light source and the light guiding plate;

the first position portion comprises a first tilt surface extending from a bottom of the body towards a bottom edge of a light incident surface, the first tilt surface comprises a first edge and a second edge, the first edge is farther from the light source than the second edge, the first edge of the first tilt surface connects with the bottom edge of the light incident surface via a bottom surface of the first position portion;

the first position slot comprises a bottom wall, and a first sidewall and a second sidewall arranged in two sides of the bottom wall, wherein the first sidewall is parallel to the first tilt surface, the second sidewall is parallel to the light incident surface, the bottom wall is parallel to a bottom surface of the first position portion; and

wherein the first sidewall closely abuts against the first tilt surface, the second sidewall closely abuts against the light incident surface, and the bottom wall closely abuts against the bottom surface of the first position portion.

5. The liquid crystal device as claimed in claim **4**, wherein the backlight module further comprises a reflective sheet arranged between the bottom of the body and the aluminum extrusion, and the reflective sheet also spans the first sidewall of the aluminum extrusion.

6. The liquid crystal device as claimed in claim **4**, wherein the backlight module comprises a light source arranged on a sidewall above the aluminum extrusion, and the sidewall faces toward a light incident surface of the light guiding plate.

7. A backlight module, comprising:

a plastic frame;

an aluminum extrusion comprising a protrusion being arranged between a first position slot and an installation slot of the aluminum extrusion;

a light guiding plate;

wherein the plastic frame and the aluminum extrusion prohibit the light guiding plate from moving in an up and down direction, wherein the light guiding plate is disposed on the aluminum extrusion, the light guiding plate comprises a body, and a first position portion extends along the body towards the aluminum extrusion;

the first position slot of the aluminum extrusion corresponding to the first position portion of the light guiding plate, and the first position portion of the light guiding plate closely engaging with the first position slot of the aluminum extrusion, and the protrusion of the aluminum extrusion being arranged between a light source and the light guiding plate

wherein the first position portion comprises a first tilt surface extending from a bottom of the body towards a bottom edge of a light incident surface, the first tilt surface comprises a first edge and a second edge, the first edge is farther from the light source than the second edge, the first edge of the first tilt surface connects with

the bottom edge of the light incident surface via the bottom surface of the first position portion;

wherein the first position slot comprises a first sidewall and a second sidewall, the first sidewall is parallel to the first tilt surface, the second sidewall is parallel to the light incident surface, and the first sidewall and the second sidewall intersect with each other in a bottom of the first position slot;

wherein the first sidewall closely abuts against the first tilt surface, and the second sidewall closely abuts against the light incident surface; and

wherein the light guiding plate further comprises a second position portion extending from the body towards the plastic frame, the plastic frame has a contact portion corresponding to the second position portion, and the second position portion closely abuts against the contact portion.

8. The backlight module as claimed in claim **7**, wherein the second position portion includes a second tilt surface extending from a top of the body towards a top edge of the light incident surface, the contact portion comprises a contact surface parallel to the second tilt surface, and the contact surface closely abuts against the second tilt surface.

9. The backlight module as claimed in claim **8**, wherein the backlight module further comprises a buffer material with reflective attribute, the buffer material is arranged between the contact surface of the plastic frame and the second tilt surface of the light guiding plate.

10. The backlight module as claimed in claim **7**, wherein the first position portion and the second position portion are formed by injection molding, and are symmetrically arranged along a length of the light guiding plate.

11. A liquid crystal device, comprising:

a backlight module comprising a plastic frame, an aluminum extrusion, and a light guiding plate, the plastic frame and the aluminum extrusion prohibit the light guiding plate from moving in an up and down direction, wherein the light guiding plate is disposed on the aluminum extrusion, the light guiding plate comprises a body, and a first position portion extends along the body towards the aluminum extrusion;

the first position slot of the aluminum extrusion corresponding to the first position portion, and the first position portion of the light guiding plate closely engages with the first position slot of the aluminum extrusion, and a protrusion of the aluminum extrusion is arranged between a light source and the light guiding plate;

wherein the first position portion comprises a first tilt surface extending from a bottom of the body towards a bottom edge of a light incident surface, the first tilt surface comprises a first edge and a second edge, the first edge is farther from the light source than the second edge, the first edge of the first tilt surface connects with the bottom edge of the light incident surface via a bottom surface of the first position portion;

the first position slot comprising a first sidewall and a second sidewall, the first sidewall being parallel to the first tilt surface, the second sidewall being parallel to the light incident surface, and the first sidewall and the second sidewall intersecting with each other in a bottom of the first position slot;

wherein the first sidewall closely abuts against the first tilt surface, and the second sidewall closely abuts against the light incident surface; and

wherein the light guiding plate further comprises a second position portion extending from the body towards the plastic frame, the plastic frame has a contact portion corresponding to the second position portion, and the second position portion closely abuts against the contact portion.

12. The liquid crystal device as claimed in claim **11**, wherein the second position portion includes a second tilt surface extending from a top of the body towards a top edge of the light incident surface, the contact portion comprises a contact surface parallel to the second tilt surface, and the contact surface closely abuts against the second tilt surface.

13. The liquid crystal device as claimed in claim **12**, wherein the backlight module further comprises a buffer material with reflective attribute, the buffer material is arranged between the contact surface of the plastic frame and the second tilt surface of the light guiding plate.

14. The liquid crystal device as claimed in claim **11**, wherein the first position portion and the second position portion are formed by injection molding, and are symmetrically arranged along the length of the light guiding plate.

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